"La Piazza" –Convivial spaces for inter-generational learning: Which role can learning technologies play?

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This paper presents the approach of La Piazza project, a study conducted in the framework of the Kaleidoscope Network of Excellence (IST-Technology Enhanced Learning), focusing ICT and intergenerational learning in public spaces (museums, community centres, civic networks, installations in public squares). It discusses the notion of Communication underpinning its theoretical foundations, illustrates the research methodologies and the emerging themes, that are further developed in the paper by Ackermann et al., also presented at ICTE06.

Keywords Learning technologies, Informal learning, Intergenerational learning, Museums.

1. Introduction

The growing importance of inter-generational learning is stressed in several policy documents as a response to the demographic trend and the consequent need to integrate the aging population through lifelong and life-wide learning strategies both in formal and informal learning contexts [1, 2]. Museums, community centres, civic networks, installations in public squares give great opportunities to cater for the social integration of adults and youths through informal learning activities in stimulating environments.

This research explores the benefits derived by adults and youths involved in intergenerational learning experiences [3, 4, 5]. What is yet largely unexplored is the role that technology can play to enhance intergenerational learning in public spaces, to stimulate creative expression, collaborative problem-solving, richer environments and learning in multi-dimensional spaces (physical and virtual).

This paper presents the approach of La Piazza project, a study conducted in the framework of the Kaleidoscope Network of Excellence (IST-Technology Enhanced Learning) by a multi-disciplinary partnership involving: CampoRosso, the University of Barcelona, the University of Liège, the University of Siena, FutureLab and LEGO.

2. A step aside: ICT in education and implicit models of communication

Before presenting the Piazza approach, we propose to make a step aside and discuss the implicit assumption that still deeply affects research and technology developments for ICT in education. There is a pervasive equation between the "communication" model underpinning technologies for education and the model of "transmission of information" elaborated by Shannon and Weaver [6] in the Bell Telephone Company Research Labs in the aftermath of World War II. Shannon and Weaver's model visualizes the process of communication as five boxes linked through five arrows (Information source – sender – source of noise – receiver – destination). This "telegraphic" model of communication becomes the model that not only inspires the hard sciences but also cybernetics (Wiener, 1948) [7], social psychology and

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the sociological disciplines addressing communication as a research object. It also becomes the foundation of the common understanding of the term "communication".

This meaning affects the boundaries and implications of our research field: also in education, ICT is understood as the channel to support the "passage or exchange of messages between a sender and a receiver, through signs and signals" [7]. This has had important implications to the shaping of research funding policies and on the technologies that are currently "on the market" for education purposes.

In the "telegraphic" model, communication is understood as mostly verbal, voluntary and rational and is confined in time between the moment of the decision of the sending of the message and the reception of the message. Communication is a conscious, voluntary act, and as such it can be evaluated, both aesthetically and ethically: it may thus be effective, successful, useless, mediocre, pathological. It can be studied experimentally in labs and the object of the observation is limited to the exchanges mediated by the machine… The telegraphic model is not convincing. It excludes the context and reduces human activity to a bi-dimensional, rational, intentional activity, circumscribed in time and isolated from the semantic flow in which it is inserted. Of course, we are neither alone, nor the first ones, in expressing this perplexity.

An alternative model emerges in a much more scattered context, with the work of a few social scientists. For Bateson (1972) [8] and others the notion of communication goes much beyond the exchange of verbal signals. They consider communication to be the matrix in which all human activities are grounded. Communication is an integrational activity (as opposed to a new-informational activity) [9]. It is an anthropological vision of communication envisaged as a permanent social activity, to which all members of society cannot but participate, through multiple verbal and non-verbal modes.

3. Inter-generational learning and public spaces: la Piazza approach

On this basis, La Piazza intends to lay the foundations for designing and analysing new educational activities in public spaces, supported by ICTs. Our goal is to pave the way to the design informal learning scenarios mediated by of technologies that are something different from tools to transfer contents "faster and more effectively". ICT for us is an element in the communication process, and one of the many possible languages to think, learn, communicate, express, socialize and create. As such ICT cannot be studied or designed regardless of the context of use, of the physical space and of the ethos and values and that are coherent with those of the communities involved.

La Piazza specifically focuses on two dimensions:

- Intergenerational learning scenarios supported by technology in public social spaces, where learning takes place across ages through meaningful social interactions based on playful and collaborative learning scenarios
- The ecological integration of technology interfaces and tools in the physical architecture of those public spaces to suppor meaningful and playful intergenerational learning activities.

Concerning the first dimension, although public spaces do normally foresee an active role of adults as mentors of young people, the philosophy is predominantly that the adults' role is to provide support and scaffolding to the youngsters, and/or to ensure the maintenance of technological infrastructure. Our main idea, instead, is that these public spaces can primarily promote inter-generational social ties and societal learning, by encouraging processes of mutual learning, between adults and youngsters, as both adults and youngsters must be considered as producers of knowledge and culture.

The second dimension at the core of our study, i.e., the spatial dimension is currently neglected by ICT research, with very few exceptions, mostly related to primary education contexts. Current research is generally focusing on the mediation of technology in the learning process in terms of:

- The interactions between technology supports and human beings
- The technology mediation of contents and human beings
- The interactions among peers mediated by technology
- The interactions mediated by technology among learners and teachers, tutors, mentors, etc.

Instead, our guiding principle is that learning activities mediated by technology, including the virtual ones, do not happen in a spatial void. Physical space is to be considered as a language and a technology,

conditioning human activities and identity building through often non-recognisable and implicit codes that are nevertheless perceived and interpreted by human beings (everybody understands that the learning experience learning at home -more informal, than the one in the classroom, even having the same level of ICT). Space perception is holistic and subjective (tactile, visual, kinaesthetic…). As any other language, space is a constitutive element of thinking and knowledge construction. This is why it is important to conceive spaces that are sensorially rich and stimulating (light, colours, smell, touch etc.), as these qualities strongly affect the learning process.
Another important quality of spaces is that they should be evolving, i.e., structured by the evolution of the community as a whole, reflecting the evolving identity of its members (both individually and collectively) and keeping a memory (traces) of this evolution. ICT can enhance these characteristics: for this purpose, we maintain that ICT should not be treated independently, as if it were separated from the physical space. Quite on the contrary, ICT must augment physical architectures of great aesthetic quality, and be ecologically and meaningfully integrated in spaces.

4. Working methodology and key results

Our methodological approach seeks to actively involve the people who promote, organize and manage inter-generational learning activities in the public spaces: museum directors, trainers, artists, NGOs, as well as some end-users. The first phase of our work involved a state of the art review to extract guiding concepts. In parallel, we developed four case studies of public spaces organizing intergenerational learning activities. The case studies methodology consisted of interviews, focus groups and direct visits to the spaces and was preparatory to the co-design activities with the stakeholders from each public space and the project team.
Co-design is a holistic approach that focuses on people's active participation in design tasks. Its objective is to bring people's different perspectives and insights on a common topic, involving them as constructive forces in design. In the co-design activity of the La Piazza project we involved stakeholders with different expertises (i.e. art, educational ICT, museum, management, formal learning, and design).
The aim of the co-design activity of the La piazza was to elicit the stakeholders' views on intergenerational learning, to trigger the generation of inspiring use of ICT to support intergenerational learning in public spaces. The co-design activity was purposely designed to promote the participation of different stakeholders through a sequence of activities with expected outputs. At the beginning of the co-design, relevant properties of intergenerational learning were outlined trough the production of stories told by the stakeholders' point of view [10]. Subsequently the properties identified as relevant in the educational contexts under consideration were clustered into eight dimensions (Table 1).

Each dimension was further explored through attribute listing technique [11] in order to highlight other aspects (i.e. places, actors, objects) related to the dimension. The outcomes were then recombined so to underpin the design of inspiring concepts of activities and artifacts for intergenerational learning[12].

Table 1. *Dimensions of intergenerational learning identified in the co-design exercise*

Dimensions	Keywords
Activity	(exploring, reflect)
Actors	(distance among generation)
Emotion	(affects, vibes)
Group Dynamics	(conversation, goal directed vs. open ended. organization)
Ludic	(competition vs. laugh and fun)
Narrative	(unveiling, story, imagination, memory)
Non verbal	(sharing the same mood, eye contact, gestural ability)
Relations	(communication, implicit balance regulation vs. circle)

Four **case studies** were developed concerning four different public spaces (**Table 2** summarizes the main characteristics of each):

- The MAMAC, Museum of Modern and Contemporary Art in Liège, Belgium (**MAMAC**)
- Cosmocaixa, the museum for popularising science in Barcelona, Spain (**COSMOCAIXA**)
- The Space Signpost project, a kinetic sculpture on the solar system in a public square in Bristol, UK (**SIGNPOST**)
- The Computer ClubHouse in Viborg, Denmark. (**CCHV**)

The cases depart, to a greater or lesser extent, from a position of respect for the learning background and learning desires. This characteristic is intrinsic of informal learning spaces. It values the learners' active role in learning: freedom of choice of learning paths, spontaneous demands for the people to collaborate with each other, enjoy, create, experiment, dream on new realities, develop among them a sense of belonging as part of a group that works and learn together.

All the spaces present similar characteristics; they are all public spaces or spaces with easy access that are well defined and delimited. This physical demarcation mediates both applied and abstract learning within a concrete environment. However, at this point the cases show some limitations. It seems that few of them encourage spontaneous production of new and autonomous knowledge by the participants, or they only do it marginally. This is an interesting issue to explore in future work.
As intergenerational learning is concerned, it emerges that the concept is understood in different ways in the cases. For some, intergenerational learning happens within families and then the best approach is to promote the activities with them. For a museum, the aim is to attract as many people as possible, so families are taken into account in order to organise exhibitions and other more interactive activities. For others, inter-generational learning happens when somebody coaches, teaches, or transmits his/her knowledge or skills. The most important is the active involvement of all the people, regardless of their number.

As with respect to ICT, it is present as a learning resource in almost all the spaces. It is intended to enrich the activities in each site, making them more appealing; however, ICT potential could be better exploited. In all the cases, the methodological concept of ICT has fallen short of what could have been possible. In one of the cases, the perception by the people in charge is that ICT (as currently available on the market) does not satisfactorily promote creativity and integration. In the context of intergenerational learning, ICT needs to be better customized, configured and used to promote the playful aspect of learning and the reciprocity in the intergenerational relationship.

5.Conclusions and areas for future research

Assuming that the cases have different characteristics, a clear conclusion is that there are different levels of integration of ICT into intergenerational learning. ICT could be better used to help the users to reflect on the nature of the experiments, to enrich the spatial dimensions of the sites combining the physical with the virtual dimensions, to increase the potential for expression and creation of participants and, finally to facilitate the access to contents as well as the communication among the members of the learning community.

Table 2. *Key Characteristics of the Case Studies*

	CCHV	MAMAC	COSMOCAIXA	SIGNPOST
Context	Well-established environment where people do something meaningful with technology by themselves	Public Museum of Contemporary Art	Interactive museum. It's a centre for popularizing science	Combination of sculpture and multimedia in public spaces (squares, parks, etc); located in the main square in Bristol
Main Goal	To increase public awareness of using computers to create art and express oneself	To Popularize Contemporary Art	To popularize scientific knowledge for people of all ages, to evoke sensitivity and feeling in the visitor who want	To increase public awareness of the nature of our place in the solar system and the "all around us - ness" of space

Target Audience	Youth 12-22 years old in Viborg, Denmark. CC It has 117 members	The museum is open to everyone	The museum is open to everyone	Open to all visitors to Millennium Square
Physical Spaces	a permanently employed leader and a number of volunteering mentors	The biggest museum in Liège. It is divided in two areas, changing over time.	50,000 square-metres, five floors, ten permanent spaces, and three itinerant exhibitions, as well as a public "science square"	Millennium Square in Bristol, as an open public space
Virtual Spaces	A web-site and the International Computer Clubhouse web-portal where member's work could be published	At the moment, this is not a priority for the museum	The website offers an exhibition space, named "Virtual Experiments", in which one can follow some of the activities of the centre.	Touch-screen interface technology
ICT	Computers, music/movie studio. CC Viborg buys the licenses for software tools. Sometimes they use free software.	Except for a website, there are no ICT structures for visitors. The intergenerational activities, there is little technologies	The exhibitions and activities, follow the scientific method and direct experimentation procedures. Many activities are virtualised through the use of technologies.	- Celestia: open source space simulation software - Macromedia Flash and HTML - LED display technology - Touch-screen interface technology - Custom control system
Intergenerationality	It is unavoidable to experience more intergenerational aspects, as people of different ages and skills are engaged as mentors	Inclusion of youth in some exhibitions; Intergenerational animation activities for the promotion of a cultural centre; Artistic animations in schools	The Museum can be enjoyed from age three on. Many activities are planned to be made by the whole family	The sculpture is in a public space, so the intergenerational aspect is directly related with the Bristol population

Some emerging themes need to be considered both research pathways and design principle to be further explored and implemented:

- Need to establish reciprocal relationships between young people and adults
- Need to build authentic communities of practice, banking, whenever possible, on existing networks.
- Need to focus intergenerational activities upon authentic work, aiming at creating relevant and demonstrable production
- Need to consider the person and his/her multiple identities (social role, role in the community, real and imaginary trajectories)
- Preserving social memory and value people's "tracks"
- Need to think the relationship among time, rhythm and space in connection with the individual and collective needs of young people and adults
- Need to consider different space characteristics and qualities

La "Piazza" aims to provide policy-makers and the research community with a sustainable research roadmap that can have an impact for educators and practitioners working in the socially relevant area of intergenerational learning in public spaces. The paper discussed the premises on which our approach is based and the methodologies used to extract design principles for intergenerational learning scenarios in public spaces, enhanced by ecologically integrated technologies.

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